

We claim:

1. A process for preparing propylene oxide, which comprises at least the steps (iii) and (iv)
 - (iii) separating off propylene oxide from a mixture (M1) comprising propylene oxide and at least one solvent by distillation in a distillation column, giving a bottom stream and a vapor stream consisting essentially of propylene oxide;
 - (iv) compressing the vapor stream obtained in (iii) by means of at least one compressor to give a compressed vapor.
2. A process as claimed in claim 1, wherein the at least one solvent is methanol.
3. A process as claimed in claim 1 or 2, wherein the distillation column used for the separation by distillation in (iii) is operated at a pressure in the range of from 450 to 750 mbar.
4. A process as claimed in any of claims 1 to 3, wherein the compression of the vapor is carried out using a turbocompressor.
5. A process as claimed in any of claims 1 to 4, wherein the vapor is compressed to a pressure in the range of from 2 to 5 bar in (iv) and the compressed vapor has a temperature which is in a range of from 8 to 20°C above the temperature of the medium vaporizing in the distillation column in (iii).
6. A process as claimed in any of claims 1 to 5, which additionally comprises the step (v)
 - (v) condensing the vapor obtained in (iv) and returning at least part of the heat of condensation to at least one vaporizer used in the distillation column employed in (iii).
7. A process as claimed in claim 6, which additionally comprises the step (vi):
 - (vi) cooling at least part of the condensate obtained in (v) to a temperature in the range of from 10 to 30°C in at least one heat exchanger and returning this part of the cooled condensate as reflux to the distillation

column used in (iii).

8. A process as claimed in claim 7, wherein propene compressed in the at least one heat exchanger used in (vi) is vaporized completely with depressurization.
9. A process as claimed in any of claims 1 to 8, wherein the energy stored in the bottom stream obtained in (iii) is at least partly used for heating the mixture (M1) before it is fractionally distilled in (iii).
10. A process as claimed in any of claims 1 to 9, which additionally comprises the steps (i) and (ii)
 - (i) reacting propene with hydrogen peroxide in the presence of a titanium silicalite catalyst and methanol as solvent to give a mixture (M0) comprising propylene oxide, unreacted propene and methanol;
 - (ii) separating off the unreacted propene from the mixture (M0) to give a mixture (M1) comprising propylene oxide and methanol.